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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,202	02/25/2004	Pierre C. Delago	14622.01	3040

7590 07/25/2006

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EXAMINER
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BRAHAN, THOMAS J

ART UNIT	PAPER NUMBER
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3654

DATE MAILED: 07/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/786,202	<b>Applicant(s)</b> DELAGO, PIERRE C.	
	<b>Examiner</b> Thomas J. Brahan	<b>Art Unit</b> 3654	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 May 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-53 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-53 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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1. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Appropriate correction is required. Claim 20 has been amended to recite the following language which is not included in the specification:

a second bearing surface forming at least a partial arc about the first axis;  
a third bearing surface opposed to the second bearing surface and forming at least a partial arc about the first axis: and  
a fourth roller received between, and in rollable contact with, the second and third bearing surfaces.

2. See the previous Office Action for quotations of 35 U.S.C. § 102(b), 103(a) and 112 (second paragraph).

3. Claims 20-30 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 20 recites that “the arc about the first axis” is a surface of the crane center post. However this is confusing as claim 19, from which claim 20 depends, has been amended to include three such arcs. s

4. Claims 52 and 53 are rejected under 35 U.S.C. § 102(b) as being anticipated by Bowes.

5. Claims 52 and 53 are rejected under 35 U.S.C. § 102(b) as being anticipated by Goudy.

6. Claims 19-29, 31-33, 35, 39-41, 49, 50 and 52, as best understood, are rejected under 35 U.S.C. § 102(b) as being anticipated by Kaltenbach. Kaltenbach shows a bearing system for a crane, the system comprising:

a first bearing surface (25) forming at least a partial arc about a first axis:  
a roller chain encompassing at least a segment of the first bearing surface and comprising:  
a first roller (26), a second roller (26), and a third roller (8), each roller including a rotational axis generally parallel to the first axis and a roller surface in rolling contact with the first bearing surface (25), wherein the rollers are radially offset from each other along the first bearing surface;  
a first member (28) interlinking the first and second rollers and maintaining an offset distance between the first and second rollers; and a second member (28) pivotal relative to the first member, interlinking the second and third rollers and maintaining an offset distance between the second and third rollers;  
a second bearing surface (20) forming at least a partial arc about the first axis;  
a third bearing surface (19) opposed to the second bearing surface (19) and forming at least a partial arc about the first axis: and  
a fourth roller (21) received between, and in rollable contact with, the second and third bearing surfaces.

The rollers (26) of ride on thrust rails (25) which are surfaces on the crane center post, as claim 20 is best understood. Alternatively, see the rejection below incorporating the Goudy reference which shows the rollers

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directly on the center post surface. The link members (28) are mounted on a crane superstructure which supports the boom, as recited in claims 21 and 50. The rollers are mounted on two roller chains, see figure 2, as to have a “back roller” which is not on the roller chain of the first, second and third rollers, as recited in claim 22. The ends of the roller chain have anchors (29), as recited in claims 23-25. When considering claims 26, 27, and 39-41, some of the links (28; note the multiple links shown in figure 5) are containment pads or flanges secured to the crane superstructure to prevent movement of the roller chain in the vertical direction. The roller chain encompasses approximately 180 degrees of the outer surface of the crane center post, as to encompass at least approximately 120 degrees as recited in claim 28 and at least approximately 180 degrees, as recited in claim 29. Note also that figure 5 shows brackets at the ends of pins (27) which have pads and flanges that prevent vertical movements of the roller chain. As Kaltenbach has 32 roller spaced about the center post, the first and second rollers are at radially offset from each other at about 11.25 degrees which is within the ranges recited in claims 31 and 32, and approximately 10 degrees, as recited in claim 33. The link members pivot relative to the rotational axes of the rollers, as recited in claim 35. The first bearing surface (25) faces outward, the second bearing surface (20) faces upward, and the third bearing surface (19) faces downward, as recited in claim 49.

7. Claims 1-8, 11-22, 28-32, 38, and 42-48 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Bowes in view of Goss et al ‘230 or by SU ‘338. Bowes shows a system for receiving and delivering into a base (17) the radial loads imposed on a crane, wherein the crane has a center post (23) operably connected to the base, the center post has a generally cylindrical outer bearing surface, and the crane rotates in at least a partial circle around a rotational axis of the center post, the system comprising:

- a plurality of rollers (27) arranged in a linked sequence along the outer bearing surface (26) of the center post (23), each roller (27) having an axis of rotation that is generally parallel to the rotational axis of the center post (23);

- a link (30) connecting each roller (27) between the first and the second rollers to its adjacent rollers to form a flexible chain of the rollers,

- wherein the linked rollers are in rolling contact with the outer bearing surface.

Bowes varies from the claims by having the rollers and links extending completely around the post (23) instead of only partially around the post as to have the link sequence anchored at the ends. Figure 3 of Goss et al ‘230 shows a similar crane with the rollers extending about a third of the way about the post. SU ‘338 shows a similar chain of rollers which extend halfway around the post to a location where the chain links are anchored to the crane. It would have been obvious to one of ordinary skill in the art at the time the invention was made by applicant to modify the roller chain of Bowes by having it extend partially about the post and anchored at its ends, as to use less rollers and have the bearing contact areas varying with the boom loading, as taught by Goss et al or as taught by SU ‘338. The anchoring arrangements of Goss et al ‘230 and SU ‘338 have the chain links fixed at the ends, as recited in claims 2 and 13. Both Goss et al and SU ‘338 have back rollers opposite the linked rollers, as recited in claims 3 and 14. Bowes has a containing pad (26) as recited in claim 4, and flanges 19, as recited in claims 5 and

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15. The roller chain of Bowes encompasses the approximately the entire outer surface of the crane center post, the extent to which a modified roller chain with a back roller would to encompass the center post, as recited in claims 6-8, 28-30, 16-18 and 45-47 would have been an obvious design consideration based upon the materials chosen for the components and the expected loading. The roller faces of Bowes are arcuate to match the face of the rail, as recited in claims 11 and 37. The attachment of the device to the post would involve tensioning the links, as a flopping linkage would not work, as recited in claims 12 and 48. Bowes has a second bearing portion and an third opposing bearing portion for a fourth roller (15), see figure 4, as recited in claim 19. Tank (23) of Bowes is a center post of the crane, as recited in claim 20, which includes a pivoted boom, as recited in claim 21. Bowes has the rollers spaced about the center post from each other at approximately 15 degrees which is within the ranges recited in claims 31 and 32.

8. Claims 9 and 36 rejected under 35 U.S.C. § 103(a) as being unpatentable over Bowes in view of Goss et al, US 4,061,230 or in view of SU '328, as applied above to claims 1 and 19, and further in view of McCain. Bowes, as modified, shows the basic claimed bearing arrangement, but varies from the claims by not having flanges on the rollers. McCain shows a similar arrangement with flanged rollers (60). It would have been obvious to one of ordinary skill in the art at the time the invention was made by applicant to modify the bearing arrangement of Bowes by substituting flanged rollers for the arcuate rollers, to have the flanges hold the rollers vertically, as taught by McCain.

9. Claims 10 and 37 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Bowes in view of Goss et al, US 4,061,230 or in view of SU '328, as applied above to claims 1 and 19, and further in view of deJong. Bowes, as modified, shows the basic claimed bearing arrangement, but varies from the claims by not having V-shaped rollers. DeJong teaches that conical and V-shaped rollers are art recognized equivalents, see the end of column 11. It would have been obvious to one of ordinary skill in the art at the time the invention was made by applicant to modify the bearing arrangement of Bowes by using V-shaped rollers and a V-shaped rail, instead of conical rollers and conical rails, as these are art recognized equivalents, as taught by deJong.

10. Claims 19-29, 31-33, 35, 39-41, 49-51, as best understood, are rejected under 35 U.S.C. § 103(a) as being unpatentable over Goudy in view of Kaltenbach. Goudy shows the basic claimed bearing system for a crane, the system comprising:

- a first bearing surface (16) forming at least a partial arc about a first axis;
- a plurality of rollers (43), each roller including a rotational axis generally parallel to the first axis and a roller surface in rolling contact with the first bearing surface;
- a second bearing surface (98) forming at least a partial arc about the first axis;
- a third bearing surface (96) opposed to the second bearing surface (311) and forming at least a partial arc about the first axis: and

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a fourth roller (100) received between, and in rollable contact with, the second and third bearing surfaces.

Goudy varies from claim 19 by not showing the details of the rollers (43) as to not show them linked together with pivoting members. Kaltenbach shows a similar bearing system for a crane with rollers (26) interconnected by links (28 and unlabeled links) which allow the slack to be taken up due to wear on the roller pins or links, see page 2, lines 91-109. It would have been obvious to one of ordinary skill in the art at the time the invention was made by applicant to provide the rollers (43) of Goudy with pivoting link members, as to have them adjustably mounted, as to have slack taken up due to wear on the rollers or the links, as taught by Kaltenbach. Rollers (43) of Goudy ride upon an arc on the crane center post, as claim 20 is best understood. The modification would have the link members mounted on the crane superstructure which supports the boom, as recited in claims 21 and 50. Kaltenbach has the rollers mounted on two roller chains, see figure 2, as to have a "back roller" which is not on the roller chain of the first, second and third rollers, as recited in claim 22. The ends of the roller chain of Kaltenbach have anchors (29), as recited in claims 23-25. When considering claims 26, 27 and 39-41, some of the links (28; note the multiple links shown in figure 5) are containment pads or flanges secured to the crane superstructure to prevent movement of the roller chain in the vertical direction. Note also that figure 5 shows brackets at the ends of pins (27) which have pads and flanges that prevent vertical movements of the roller chain. The roller chain encompasses approximately 180 degrees of the outer surface of the crane center post, as to encompass at least approximately 120 degrees as recited in claim 28 and at least approximately 180 degrees, as recited in claim 29. As Kaltenbach has 32 roller spaced about the center post, the first and second rollers are at radially offset from each other at 11.25 degrees which is within the ranges recited in claims 31 and 32, and approximately 10 degrees, as recited in claim 33. The link members pivot relative to the rotational axes of the rollers, as recited in claim 35. The first bearing surface (16) faces outward, the second bearing surface (98) faces generally upward, and the third bearing surface (96) faces generally downward, as recited in claim 49. Goudy has a third bearing system (88) adjacent the top end of the center post, as recited in claim 51.

11. Claims 19-21, 28-32, 34, 35, 38 and 49-51, as best understood, are rejected under 35 U.S.C. § 103(a) as being unpatentable over Goudy in view of Bowles. Goudy shows the basic claimed bearing system for a crane, the system comprising:

a first bearing surface (16) forming at least a partial arc about a first axis;

a plurality of rollers (43), each roller including a rotational axis generally parallel to the first axis and a roller surface in rolling contact with the first bearing surface;

a second bearing surface (98) forming at least a partial arc about the first axis;

a third bearing surface (96) opposed to the second bearing surface (311) and forming at least a partial arc about the first axis; and

a fourth roller (100) received between, and in rollable contact with, the second and third bearing surfaces.

Goudy varies from claim 19 by not showing the details of the rollers (43) as to not show them linked together with pivoting members. Bowes shows a similar bearing system for a crane with rollers (27) interconnected

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by pivotally connected links (30), see column 2, lines 43 and 44. It would have been obvious to one of ordinary skill in the art at the time the invention was made by applicant to provide the rollers (43) of Goudy with pivoting link members, as to have them mounted for limited movement, as taught by Bowes. The ends of the roller chain of Kaltenbach have anchors (29), as recited in claims 23-25. The roller chain of Bowes encompasses the approximately the entire outer surface of the crane center post, as to encompass at least approximately 120 degrees, at least approximately 180 degrees, and at least approximately 270 degrees, as recited in claims 28-30. Bowes has the rollers spaced about the center post from each other at approximately 15 degrees which is within the ranges recited in claims 31 and 32. Some of the link members of Bowes are non-pivoting, as acknowledged by applicant's remarks in amendment filed May 5, 2006, as recited in claim 34, and others pivot, as recited in claim 35. Having the rollers (43) and their rail with arcuate profiles, as recited in claim 38, would also have been obvious in view of the teachings of Bowes. The first bearing surface (16) faces outward, the second bearing surface (98) faces generally upward, and the third bearing surface (96) faces generally downward, as recited in claim 49. Goudy has a third bearing system (88) adjacent the top end of the center post, as recited in claim 51.

12. Claim 36 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Kaltenbach in view of McCain. Kaltenbach, shows the basic claimed bearing arrangement, as detailed above, but varies from claim 36 by not having flanges on the rollers. McCain shows a similar arrangement with flanged rollers (60). It would have been obvious to one of ordinary skill in the art at the time the invention was made by applicant to modify the bearing arrangement of Kaltenbach by substituting flanged rollers for the flat rollers, to have the flanges hold the rollers vertically, as taught by McCain.

13. Claim 36 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Goudy in view of Bowes, as applied above to claim 19, and further in view of McCain. Goudy, as modified, shows the basic claimed bearing arrangement, but varies from claim 36 by not having flanges on the rollers. McCain shows a similar arrangement with flanged rollers (60). It would have been obvious to one of ordinary skill in the art at the time the invention was made by applicant to modify the bearing arrangement of Goudy by substituting flanged rollers for the flat rollers, to have the flanges hold the rollers vertically, as taught by McCain.

14. Claim 36 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Goudy in view of Kaltenbach, as applied above to claim 19, and further in view of McCain. Goudy, as modified, shows the basic claimed bearing arrangement, but varies from claim 36 by not having flanges on the rollers. McCain shows a similar arrangement with flanged rollers (60). It would have been obvious to one of ordinary skill in the art at the time the invention was made by applicant to modify the bearing arrangement of Goudy by substituting flanged rollers for the flat rollers, to have the flanges hold the rollers vertically, as taught by McCain.

15. Claim 37 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Kaltenbach in view of deJong.

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Kaltenbach shows the basic claimed bearing arrangement, as detailed above, but varies from claim 37 by not having V-shaped rollers. DeJong teaches that conical and V-shaped rollers are art recognized equivalents, see the end of column 11. It would have been obvious to one of ordinary skill in the art at the time the invention was made by applicant to modify the bearing arrangement of Kaltenbach by using V-shaped rollers and a V-shaped rails instead of flat rollers and flat rails, to hold the rollers vertically, as taught by deJong.

16. Claim 37 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Goudy in view of Kaltenbach or Bowes, as applied above to claim 19, and further in view of deJong. Goudy, as modified, shows the basic claimed bearing arrangement, but varies from claim 37 by not having V-shaped rollers. DeJong teaches that conical and V-shaped rollers are art recognized equivalents, see the end of column 11. It would have been obvious to one of ordinary skill in the art at the time the invention was made by applicant to modify the bearing arrangement of Kaltenbach by using V-shaped rollers and a V-shaped rails instead of flat rollers and flat rails, to hold the rollers vertically, as taught by deJong.

17. Claims 51 and 53 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kaltenbach in view of Goudy. Kaltenbach shows the basic claimed king post crane with two sets of bearings. It varies from the claims by not having a third set of bearings. Figure 5 of Goudy shows a similar king post crane with two upper bearing systems, thrust bearing system (86) and radial bearing system (88), at the top of the king post. It would have been obvious to one of ordinary skill in the art at the time the invention was made by applicant to modify the bearing arrangement at the top of king post of Kaltenbach by replacing the single bearing arrangement at the top of the kingpost with a double bearing arrangement, as to have both thrust and radial bearing systems at the top of the king post, as taught by Goudy.


18. Applicant argues in the amendment filed May 5, 2006, that claim 1 avoids the combination of Bowes in view of Goss et al '230 or in view of SU '388 because the claims recite a "plurality of flexibly interlinked rollers" and first and second pivotal related members, and that "As can be understood from Fig. 6 of Bowes, the links 30 of Bowes, which are used to connect the rollers 29, are joined together via two bolts to form a rigid connection between the links 30". However applicant's broadest claims are devoid of the pivoting limitation, only requiring the chain to form a flexible chain. This would be true even if the arrangement of Bowes were constructed as believed by applicant's interpretation of Figure 6. However applicant's interpretation of figure 6 does not correspond to its specification which teaches that these links are pivoted, see column 2, lines 43 and 44, which states "Each of the cages comprises pivotally connected, tapering links 30". Applicant's remaining remarks have been fully considered, but are deemed moot in view of the above new rejections. The amendment necessitated the new grounds, accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).



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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

19. An inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas J. Brahan whose telephone number is (571) 272-6921. The examiner's supervisor, Ms. Katherine Matecki, can be reached at (571) 272-6951. The new fax number for all patent applications is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Questions regarding access to the Private PAIR system, should be directed to the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Thomas J. Brahan  
Primary Examiner  
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